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**EPAct Test Programs in ASD**  
**13<sup>th</sup> Bi-Weekly Report**  
July 31, 2008

**1. Light Duty Gas Exhaust Fuels**

Contractor: SwRI, EP-C-07-028, WA 0-1  
WAM: Connie Hart  
Alt. WAM: Rafal Sobotowski  
Other team members: Carl Scarbro, Mike Christianson, Tony Fernandez, Carl Fulper, Aron Butler  
Budget: \$4.3M, plus \$3M in collaboration with NREL

Objective: Phases 1 and 2 are in support RFS 2 NPRM and Phase 3 is to establish the effects of RVP, T50, T90, aromatic and EtOH content on exhaust emissions from Tier 2 vehicles

Time Line

- Testing began by second week of April
- Phase 1 and half of Phase 2 finished by the end of June: Fuels 17 and 18 of Phase 1 were complete by end of June. Fuel 19 by end of July due to fuel delivery delays.
- Phase 3 will be finished May 2009: Phase 3 to be complete by October 2009 between testing/fuel delays to date and additional CRC fuels added into our random matrix.

Program Status:

- Fuel status for Phase 1:
  - Fuel 17, 18, and 19 have been delivered.
  - Coordinating closely with SwRI and Halterman to ensure that they can provide Phase 3 fuels much quicker than Phase 1.
    - Halterman working closely with their contractor (Gage in Detroit) to facilitate smoother operations.
    - A visit to Gage has been scheduled for August 6 from EPA, NREL and SwRI.
- All data is in for Fuel 17 and 18.
- Rafal is working with the Refinery Tool software, inputting all the necessary information to design the fuels for Phase 3.
- Data/Analysis:
  - Dataset from Fuel 19 is coming in and we have started looking at it.

**2. Oil Study**

Contractor: NVFEL  
Project lead: Mike Christianson, Rafal Sobotowski  
Budget:

Objectives: Results to impact Phase 3 of EPAct study at SwRI (July)

Objective 1: Define duration of engine oil conditioning needed to stabilize the effect of oil volatility on PM emissions

Objective 2: Define the impact of lubricant interaction with fuel ethanol on PM emissions

Time Line

- Estimated duration of pilot: 15 weeks (May 11)

Program Status:

- Ewa Bardez of Lubrizol is coming to NVFEL on August 8 to discuss the results and oil issues for Phase 3 of fuel testing.

### 3. PM Speciation

Contractor: NVFEL

Project lead: Mike Christianson, Marion Hoyer

Other team members: Carl Scarbro, Rafal Sobotowski, Joe McDonald

Budget: \$345K (\$55K on inventory and data issues from other EPA Act programs)

Objective: To determine fuel effects on PM mass, size and composition, and obtain speciated semi-volatile VOC, metals and ions, and gaseous VOC (MSATs), alcohols and carbonyls.

Time Line: Late 2008

Program Status:

- Continual meetings on development of SOW/QAPP and Round Robin.
- SOW due next week.
- Toxic Sampler back at AVL to update parts. Will tell us if can meet our specs for this project.

### 4. Nonroad Exhaust Program

Contractor: Carnot Intertek

WAM: Carl Scarbro

Alt. WAM: Cheryl Caffrey

Budget: \$830K

Project Overview:

Objective: Testing 6 paired engines including 2 Class 1, 2 Class 2, 2 Class 4, (one Class 2 engine has catalyst) on three fuels; national average non-oxy gasoline (Fuel A), an octane matched E10 (Fuel B), and a certification fuel (E0).

Timeline

- The original program was to be completed last year
- Should begin by April 1st and finish in October of this year: delays in schedule due to fuel delivery status.

## Program Status

- Kawasaki and Honda engines have been aged to 1/2 useful life have been emission tested at end of useful life by July 29 on three test fuels (Cert fuel, Fuel 17, Fuel 18 (E10)). Results received July 30.
- B&S Class I engine has been baseline emission tested and E10 is shown to result in a decrease in emissions by approximately 18% (baseline) compared to certification test fuel. Other engines (Kawasaki and Honda) showed increased emissions with E10 at baseline. Possibly it has to do with the engine cylinder design (Side Valve v OHV).
- Echo (handheld) engine has been emission tested at baseline and is currently under durability aging. At baseline, E10 emission results were 5.7% below cert fuel results for HC+NOx.

### **4.a. Nonroad Exhaust tie-in with CARB**

Contractor: SwRI  
WAM: Cheryl Caffrey  
Alt. WAM:  
Other team members: Carl Scarbro, Tony Fernandez  
Budget: \$500K

### **5. Evap Testing**

Contractor: SwRI, EP-C-07-028, WA 0-4  
WAM: Connie Hart  
Alt. WAM: Dave Brzezinski  
Other team members: Carl Scarbro, Tony Fernandez  
Budget: \$600K

Objective: Additional, newer technology, high sales volume vehicles to the CRC E-77-2 permeation test program.

Time Line: Testing from June 2008 thru June 2009: Testing will not start until end of summer.

#### Program Status:

- We received the Work Plan from SwRI on 7/25 and are reviewing. SwRI has proposed to subcontract this project to Harold Haskew.

### **6. Determine Percent of High Evaporative Vehicles in Fleet**

Contractor: ERG, EP-C-06-080, WA 1-2  
WAM: Connie Hart  
Alt. WAM: Dave Brzezinski  
Other team members: Carl Scarbro, Carl Fulper, Tony Fernandez, Jim Warila  
Budget: \$1M

Objective: Find the percentage of high emitting evaporative emission vehicles in the average fleet of on-road motor vehicle passenger cars and light trucks.

#### Time Line

- ICR clock started with Federal Register notice 2/14/08
- SOW package went to Cincinnati 2/22/08
- Approval of Work Plan by March 24: Work Plan was approved June 19 (after CRADA signed).
- Contractor to supply supporting documents for ICR submission March 31: delivered May 8<sup>th</sup>.
- Another 30 day comment period for ICR, roughly month of May.
- Goal is to have ICR in place by mid-June for recruitment and pilot field work to begin. Partial ICR approval has been given for the Pilot phase.
- Finalize test procedure for larger program by August 22 so recruitment can begin for field work in Sept and October
- Compile data and draft report by early December of 2008

#### Program Status:

- OMB has granted partial approval of ICR for the Pilot phase of the program.
- ERG has been in field since July 14. They completed two weeks of preliminary work, proving out the RSD screening and the PSHED. The PSHED looks especially encouraging.
- ERG is set up at the IM lanes and have started recruitment of the 100 vehicles.
- Connie Hart will go to Colorado next week to oversee the project over the next three weeks (a few days each week, with AL in between). We need to learn our lessons and develop the plan relatively quickly to resubmit our ICR for the larger program to attain approval for field deployment in September.